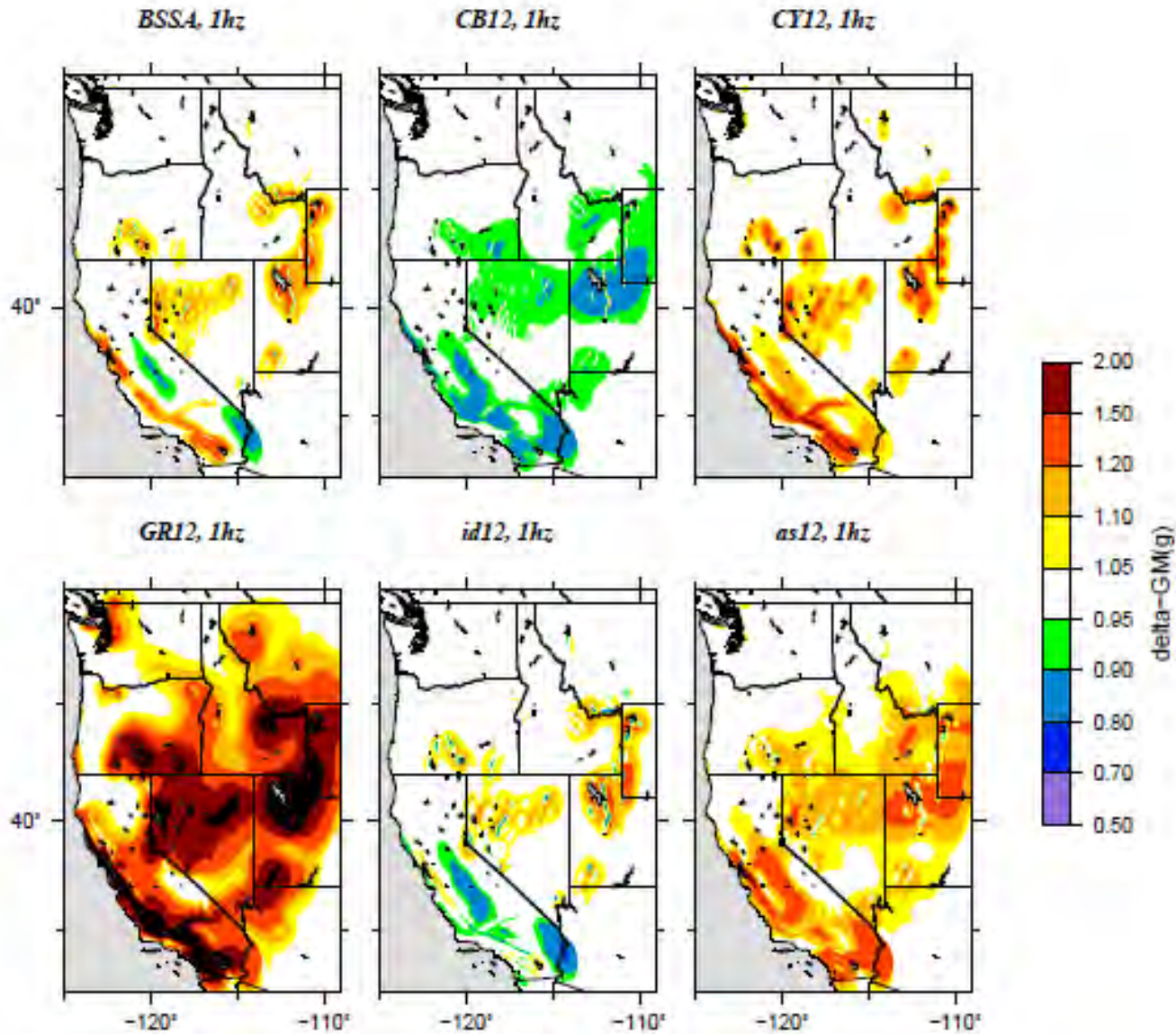
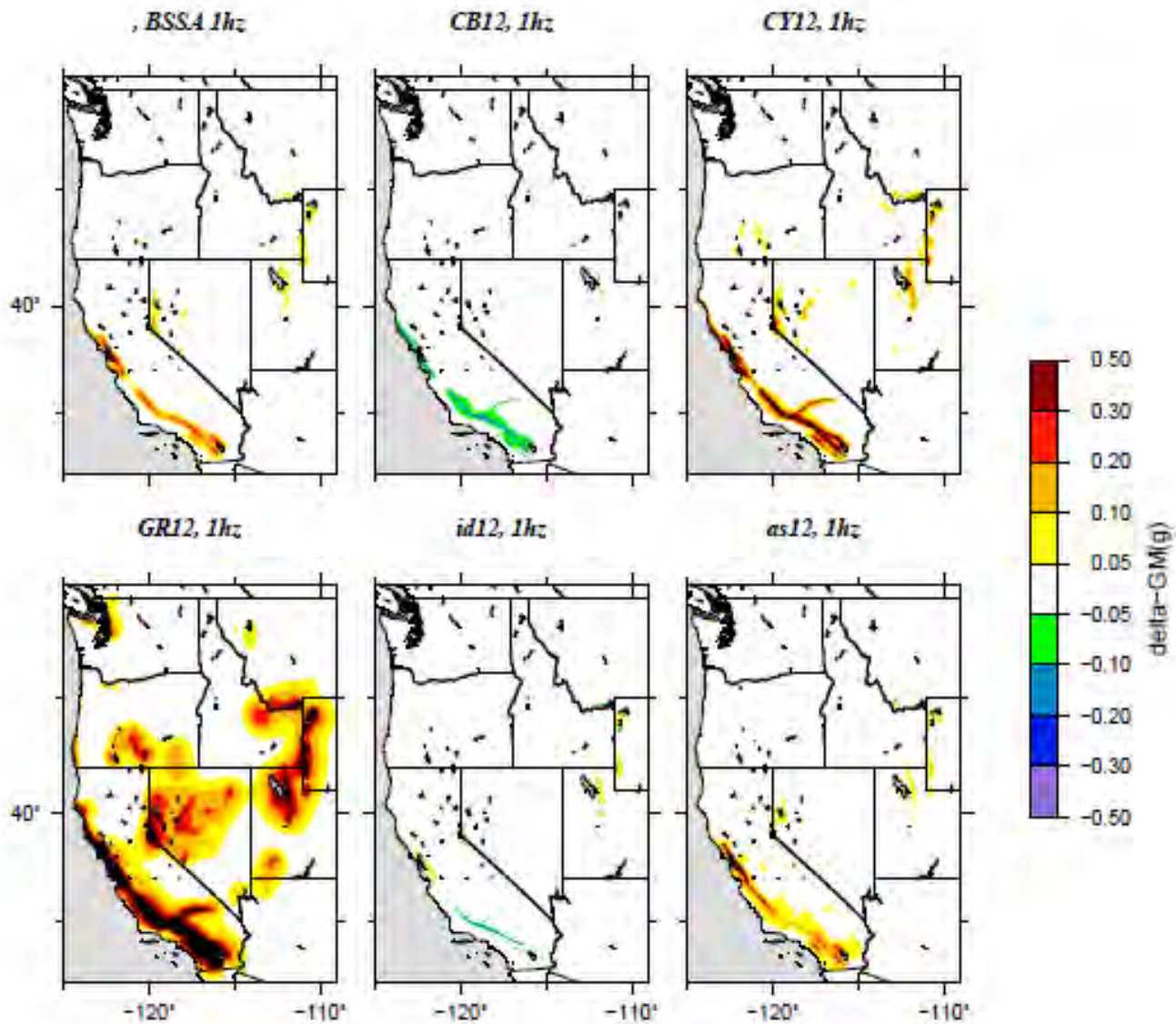


# Sensitivity for WUS ground motion models

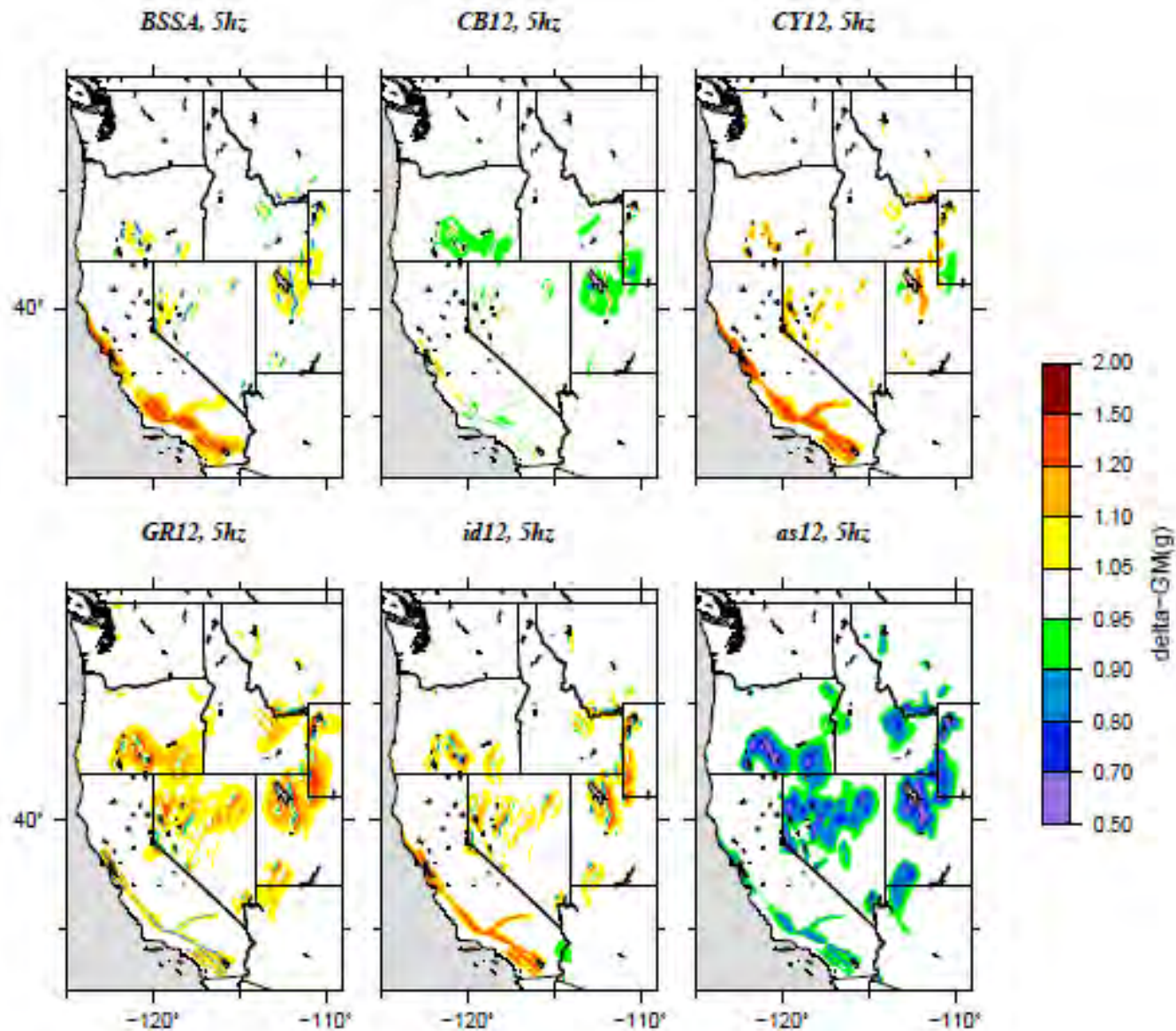
# GMPE ratios 1hz over 2008 model



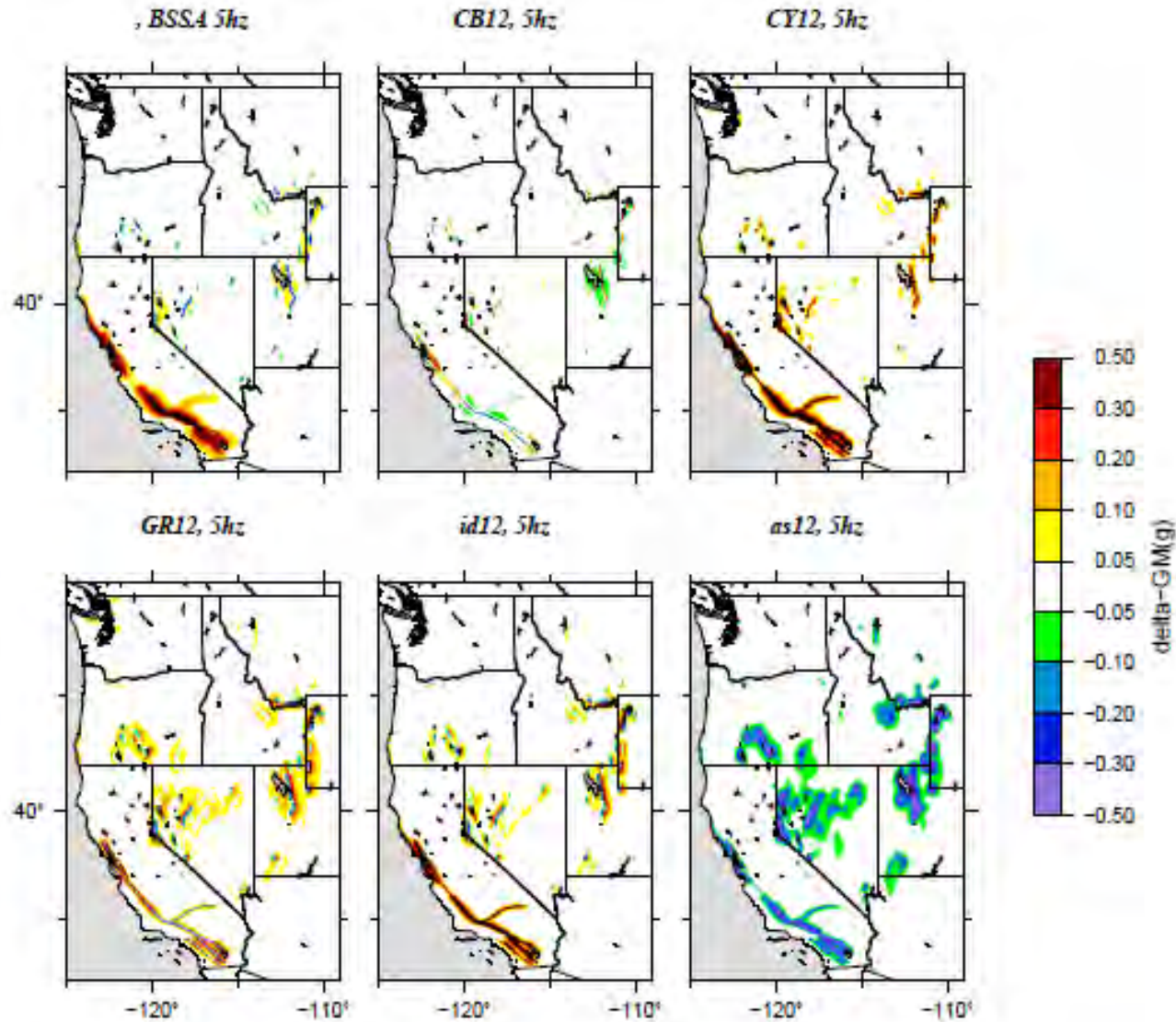
# GMPE diff 1 hz wrt 2008



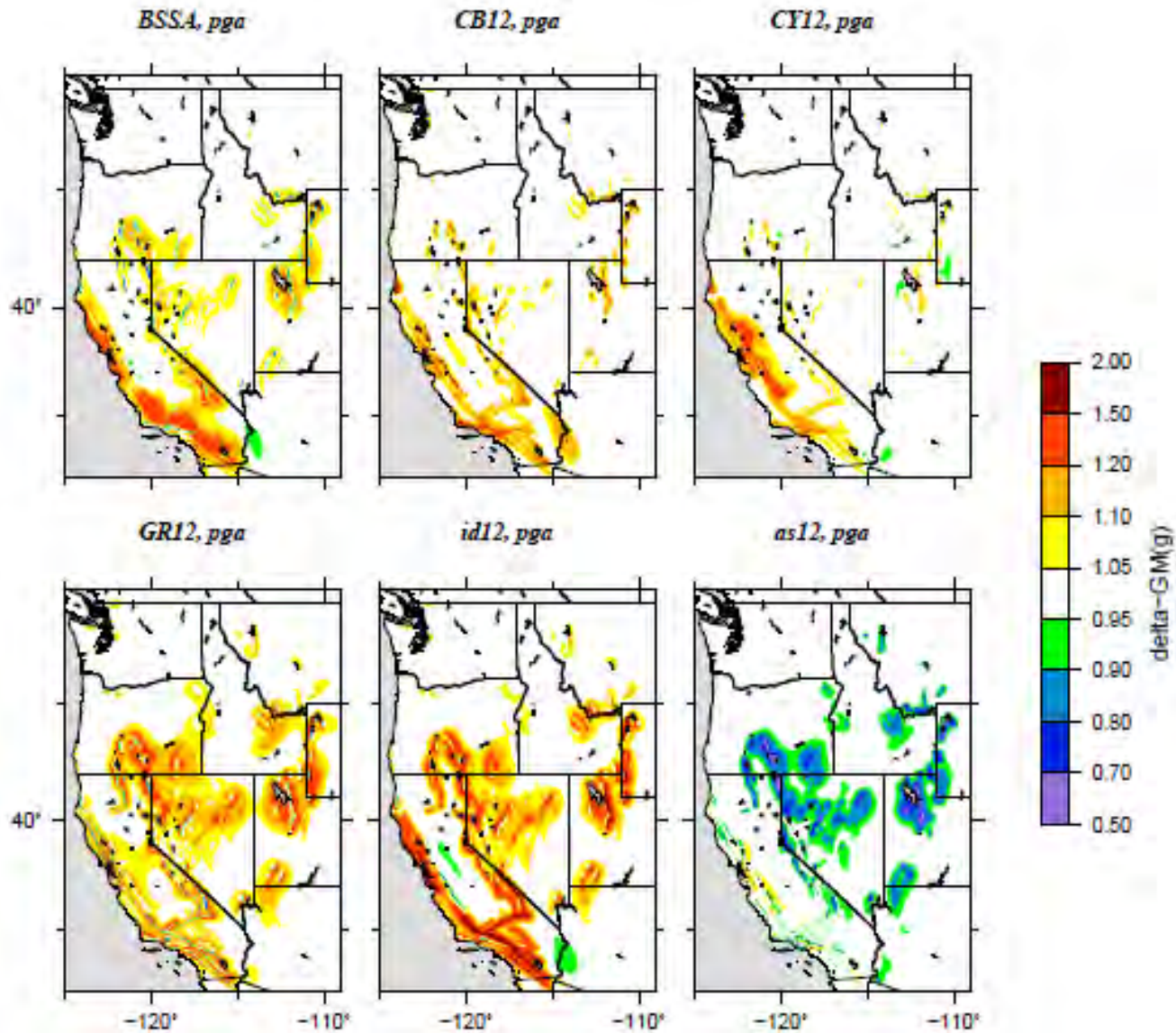
# GMPE ratios 5hz over 2008 model



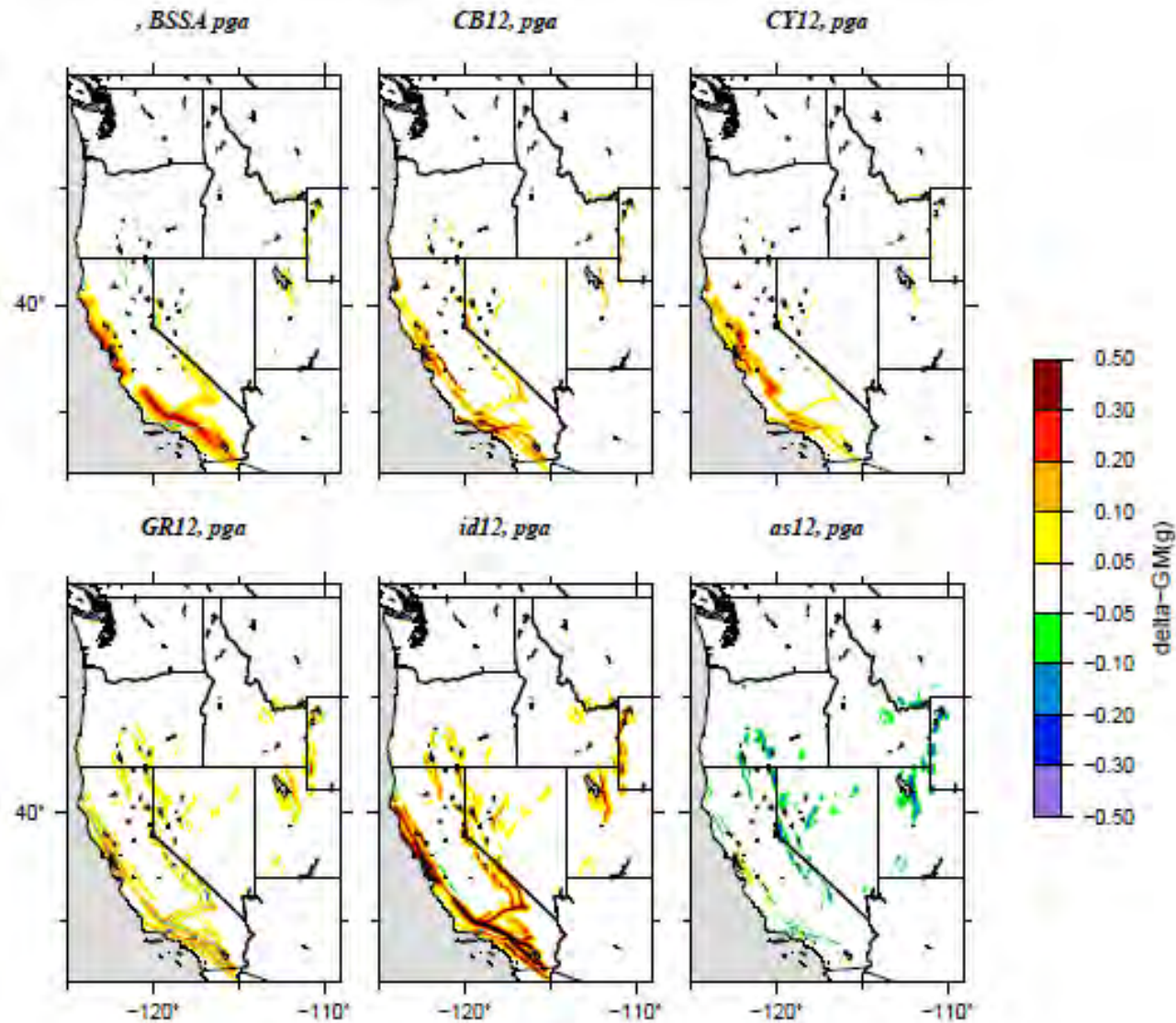
# GMPE diff 5 hz wrt 2008



# GMPE ratios PGA over 2008 model

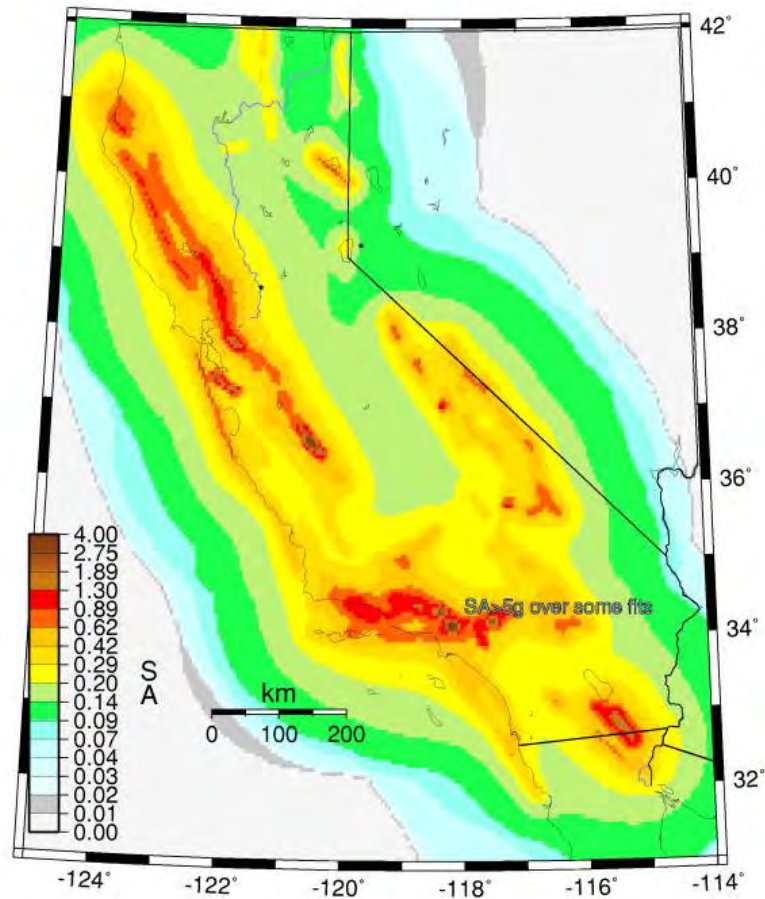


# GMPE diff pga wrt 2008



# Abrahamson and Silva

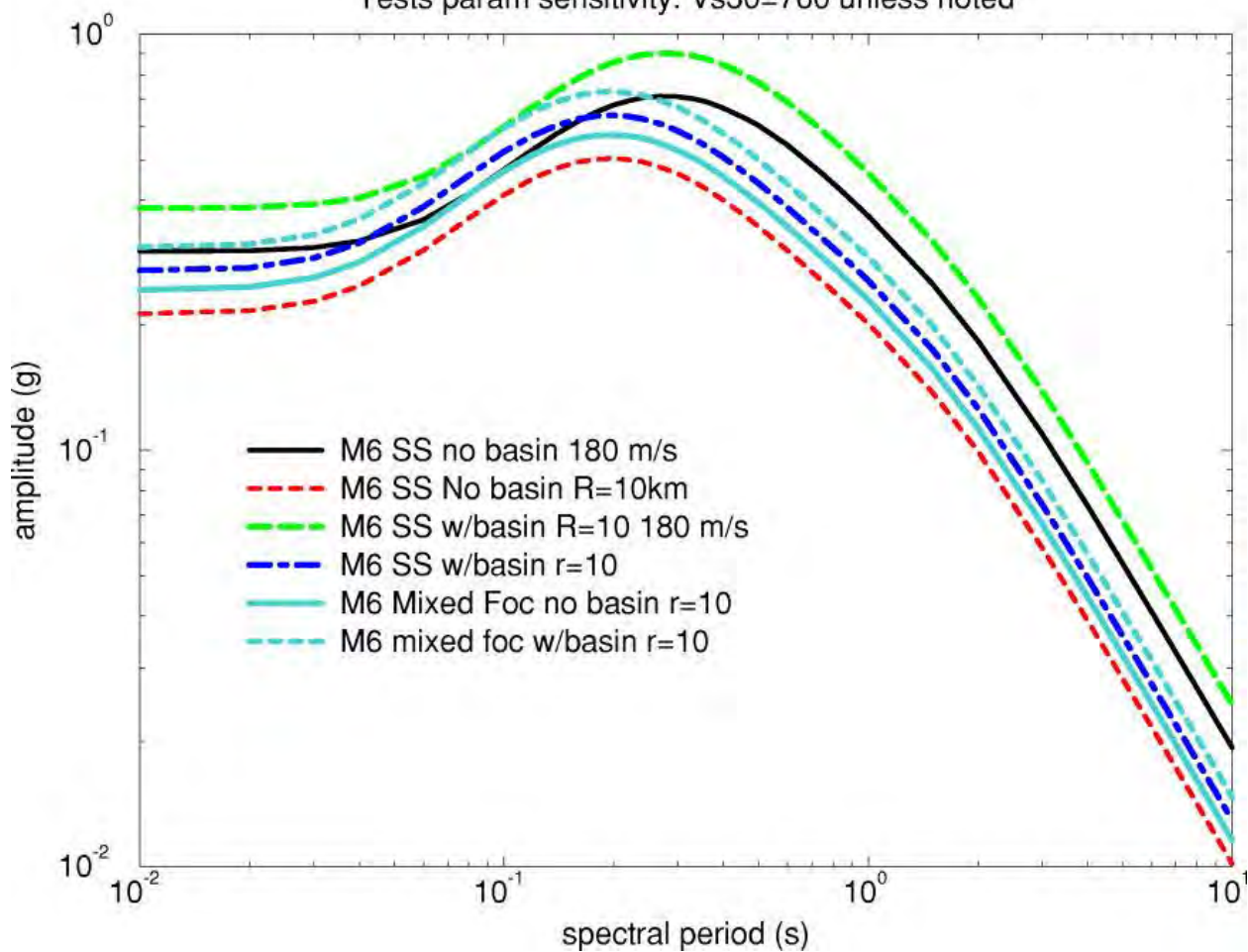
Abrahamson-S12 SA for period 1 s., bFaults





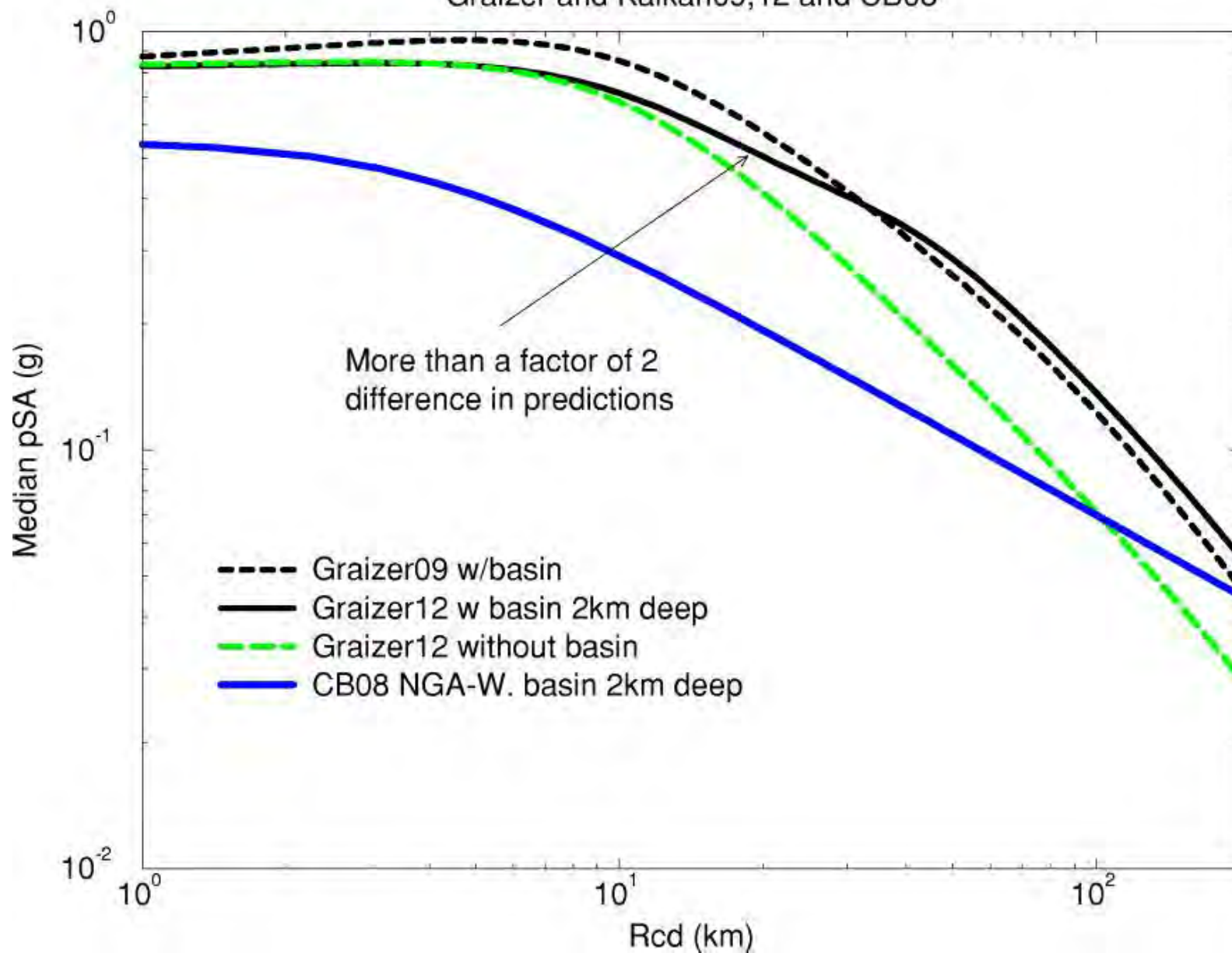
# Graizer and Kalkan 2009

Tests param sensitivity. Vs30=760 unless noted



# Compare 1s medians for M8 SS src. 760 site

Graizer and Kalkan09,12 and CB08



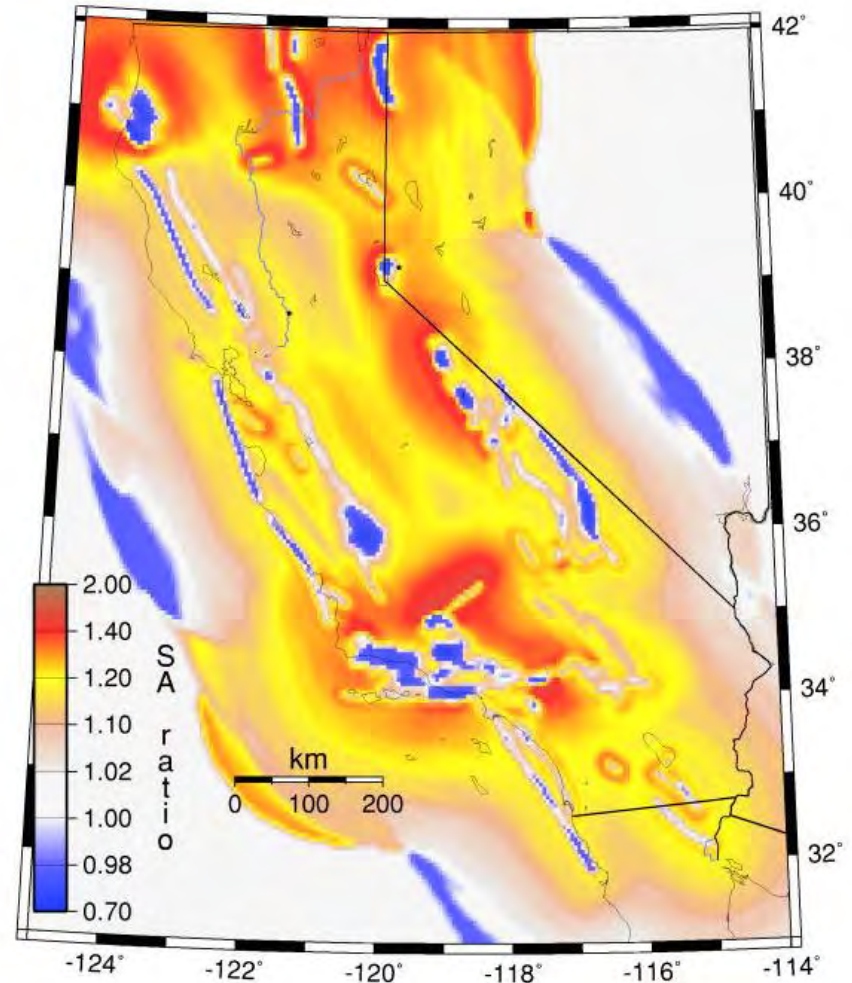
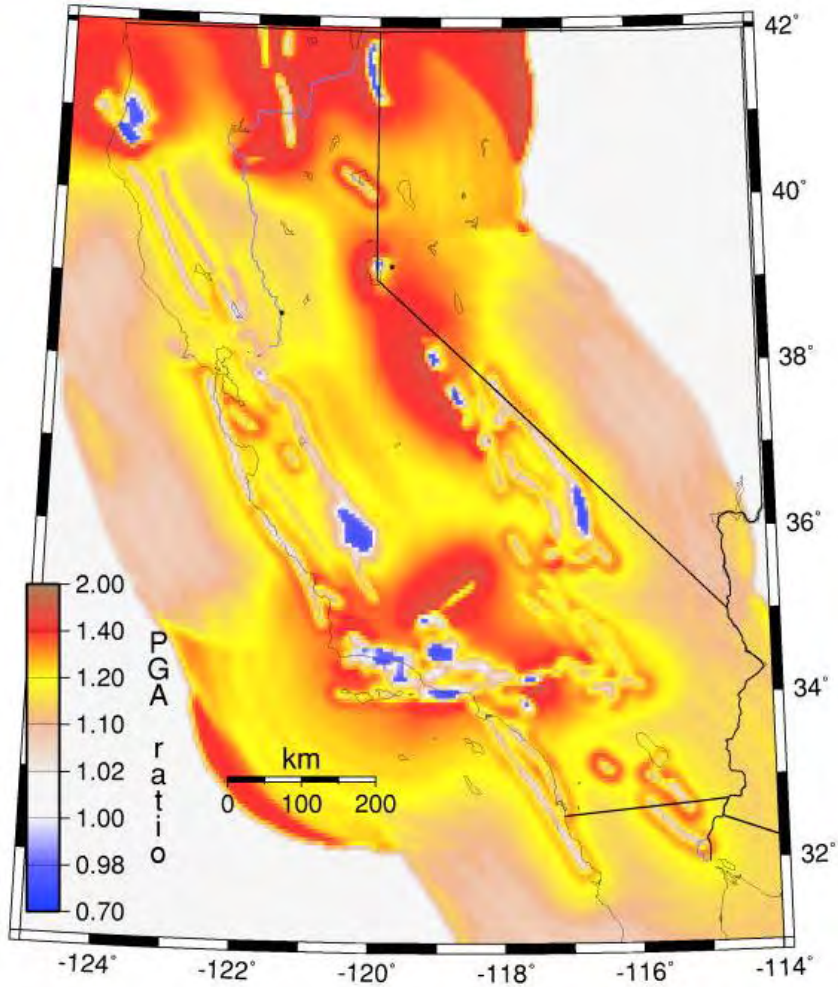
# Conclusions

- Major increases in GM over faults for 1 hz

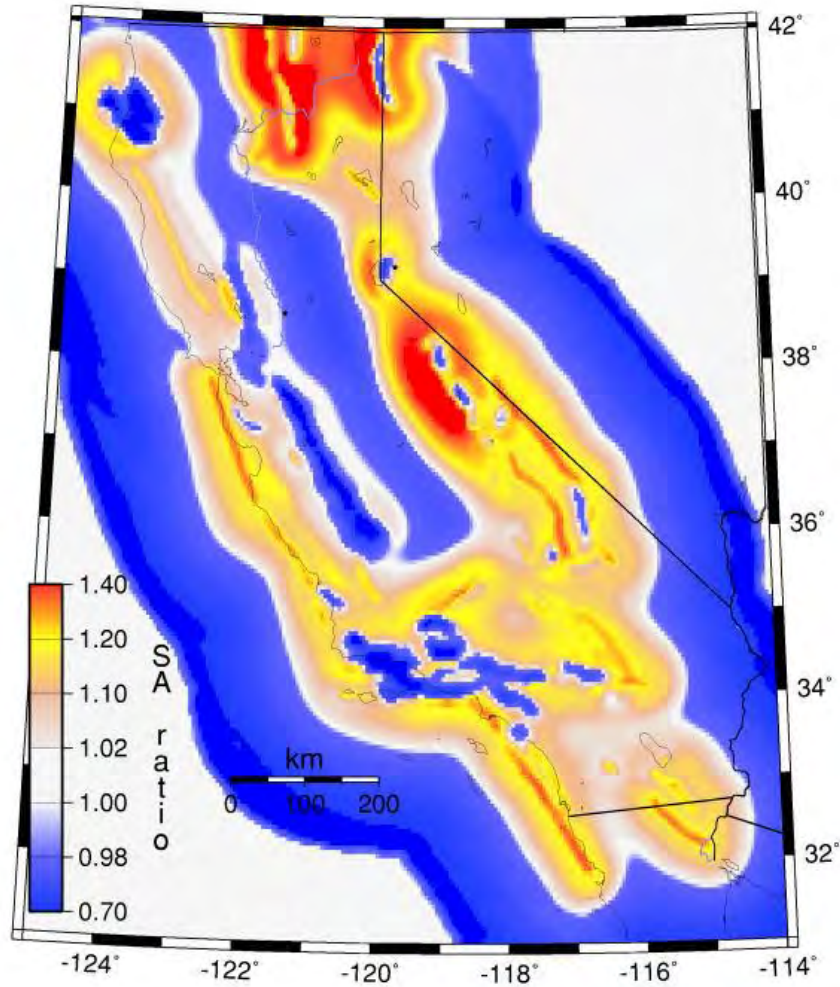
# Graizer and Kalkan

Graizer-K12/NSHMP2008 PGA ratio, bFaults

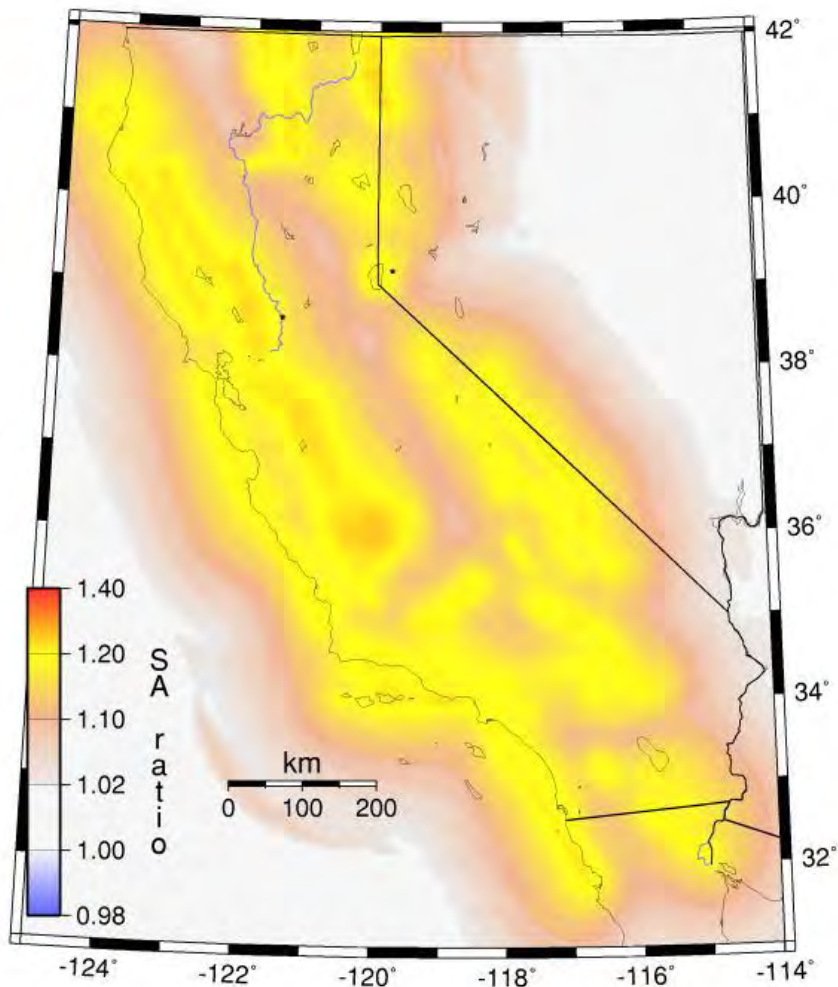
Graizer-K12/NSHMP2008 5-hz SA ratio, bFaults



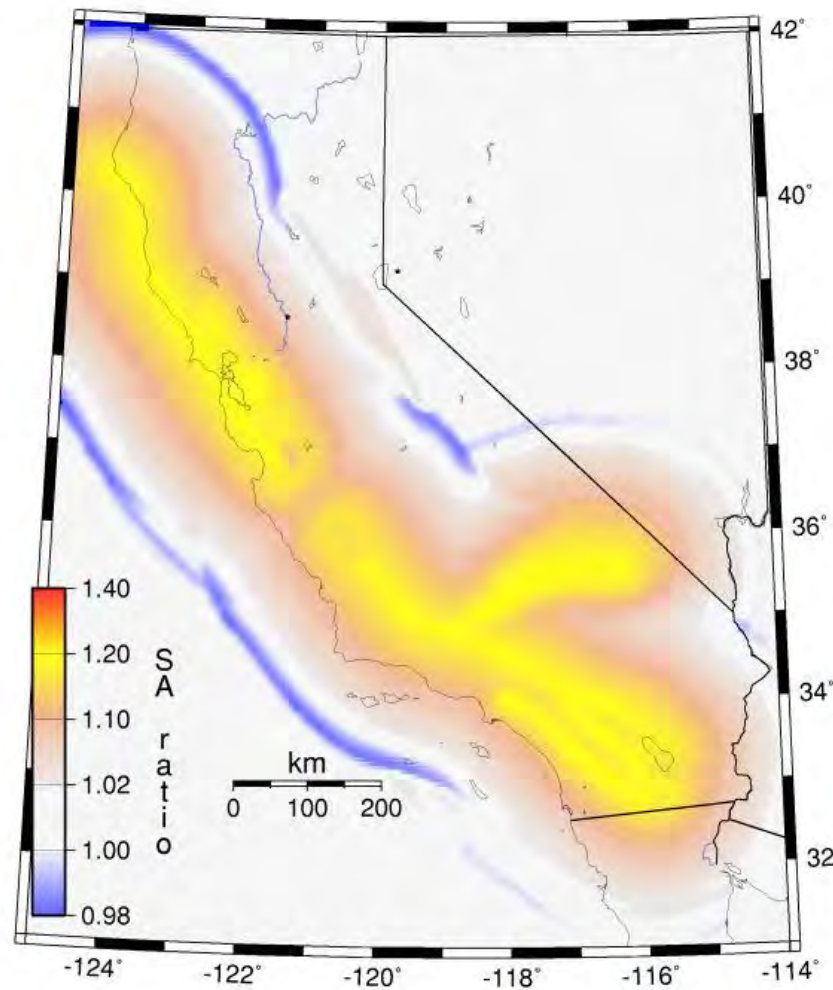
Idriss12/CB12 5-hz SA ratio, bFaults



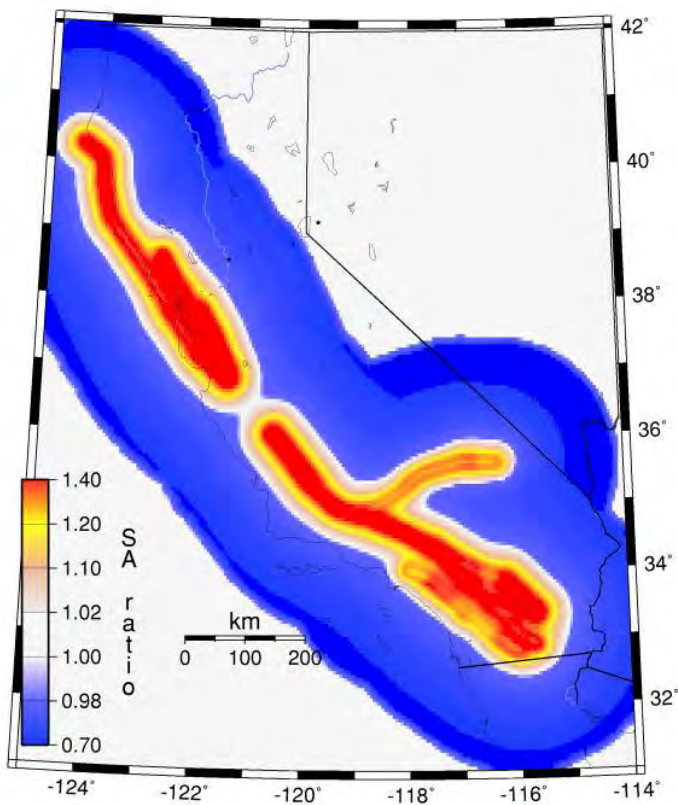
CY12/CY08 5-hz SA ratio, bFaults



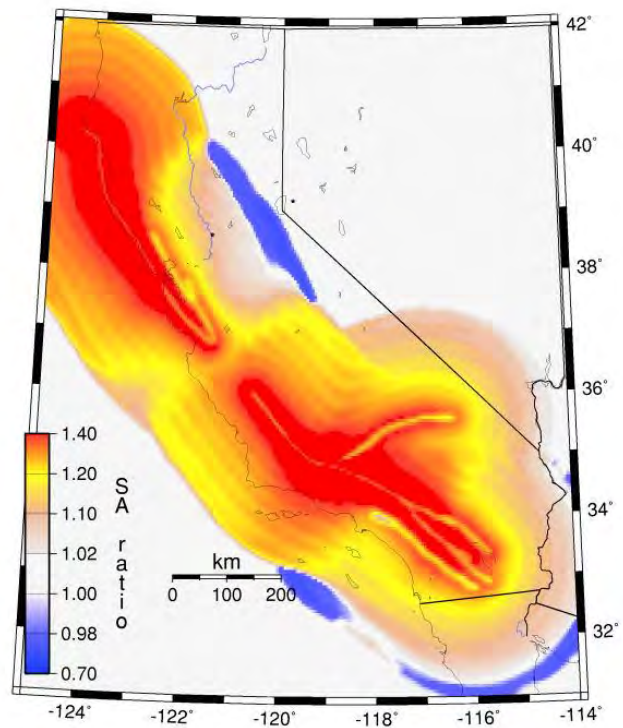
CY12/CY08 5-hz SA ratio, aFaults

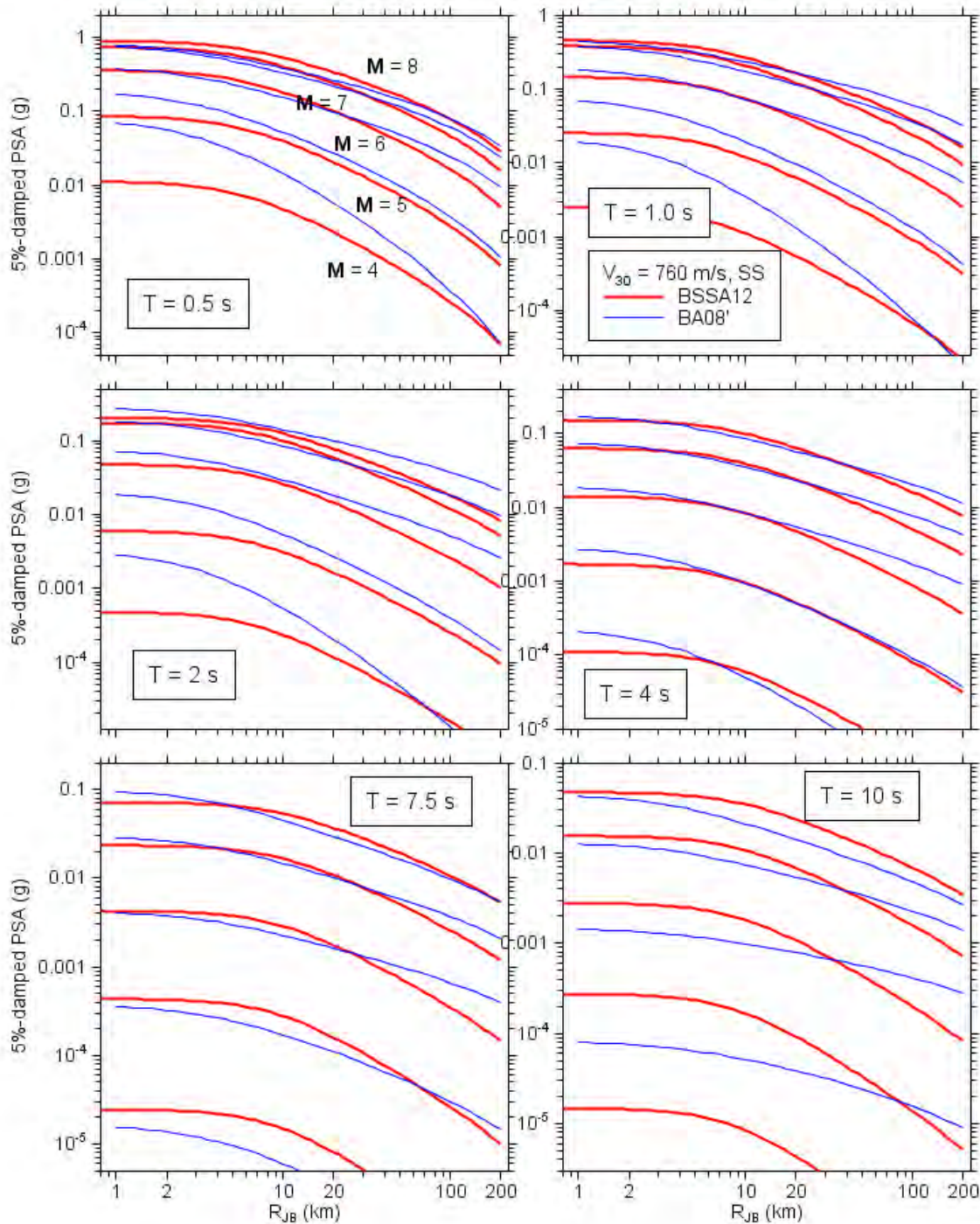


BSSA12/BA08 1hz SA ratio, aFaults



BSSA12/BA08 5hz SA ratio, aFaults





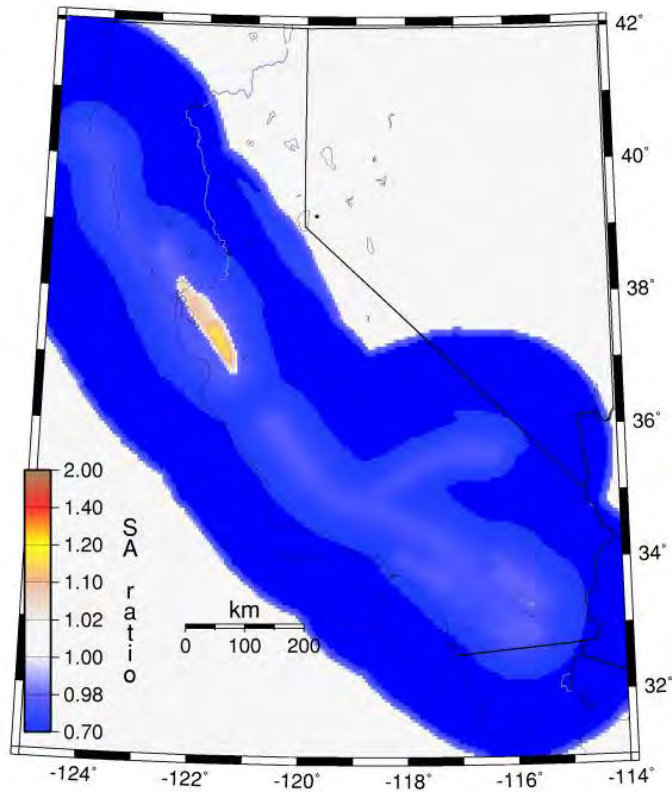
Two contributors to increase in Hazard:

1. Upper right plot for  $M 7$  Shows increase in gm.
2. Sigma has increased for 1.0 s from  $\sim 0.64$  to 0.78.

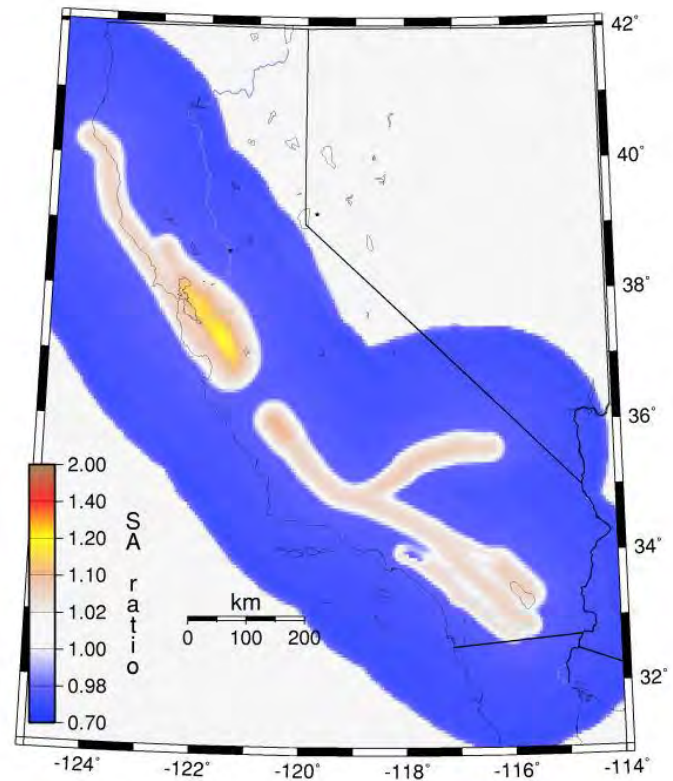


# Campbell and Bozorgnia

CB12/CB08 1hz SA ratio, aFaults

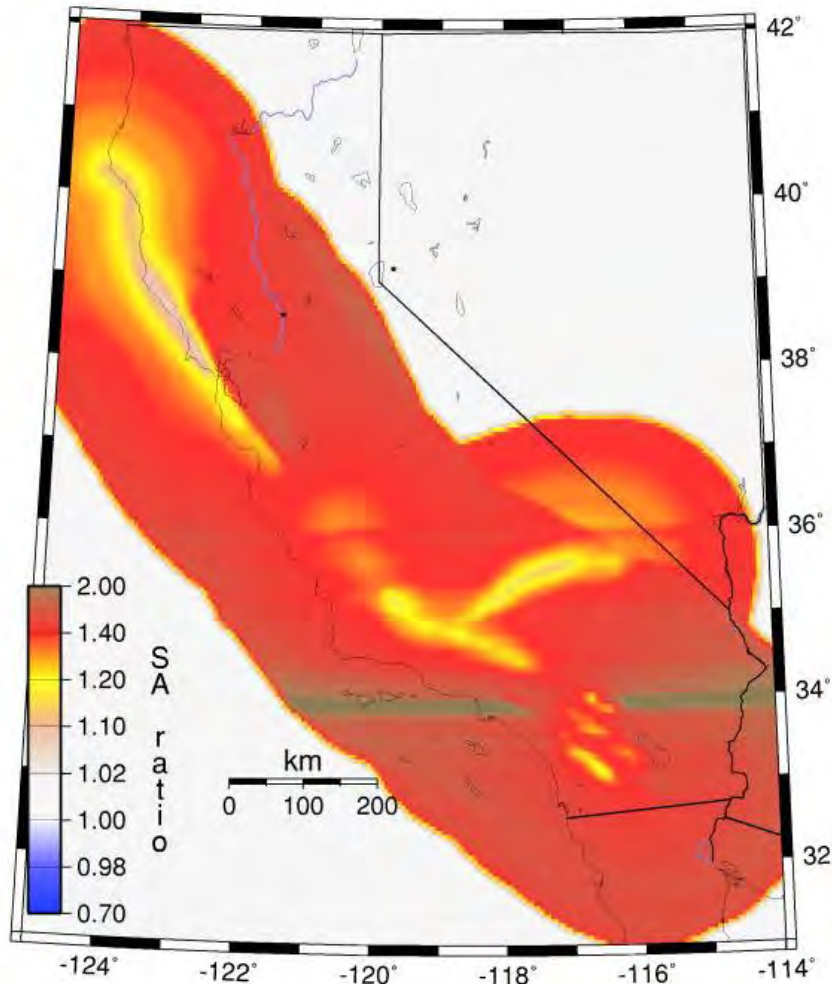


CB12/CB08 5hz SA ratio, aFaults

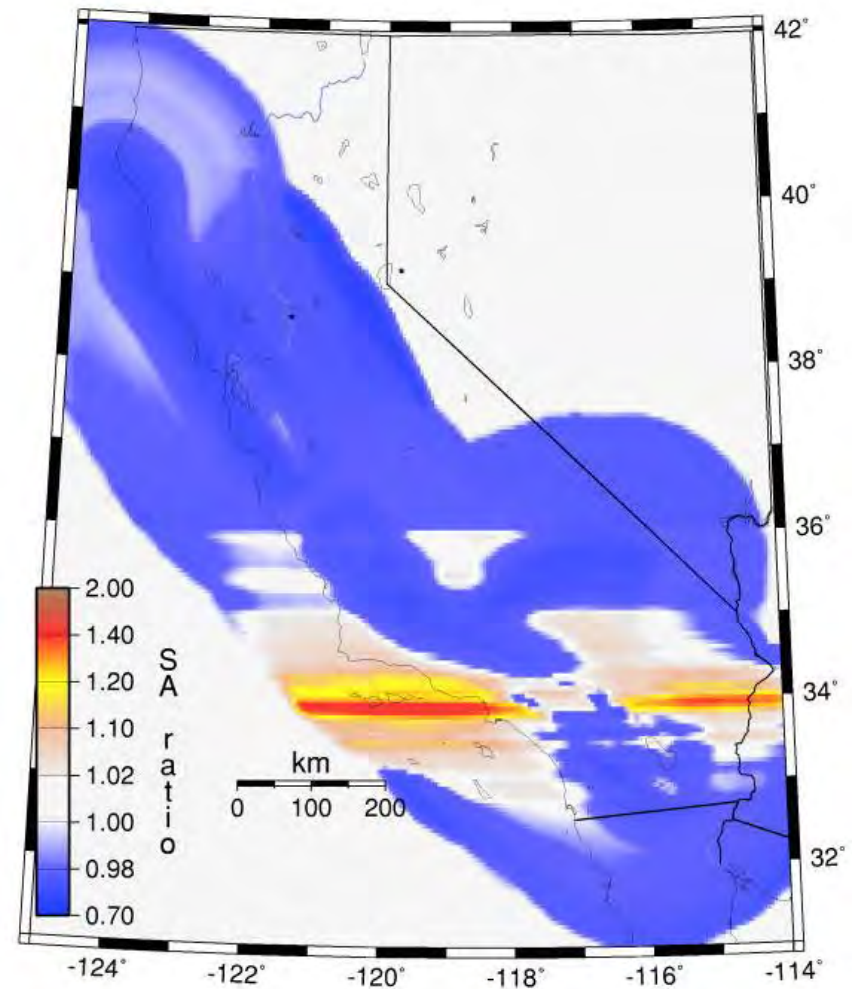


# Abrahamson and Silva

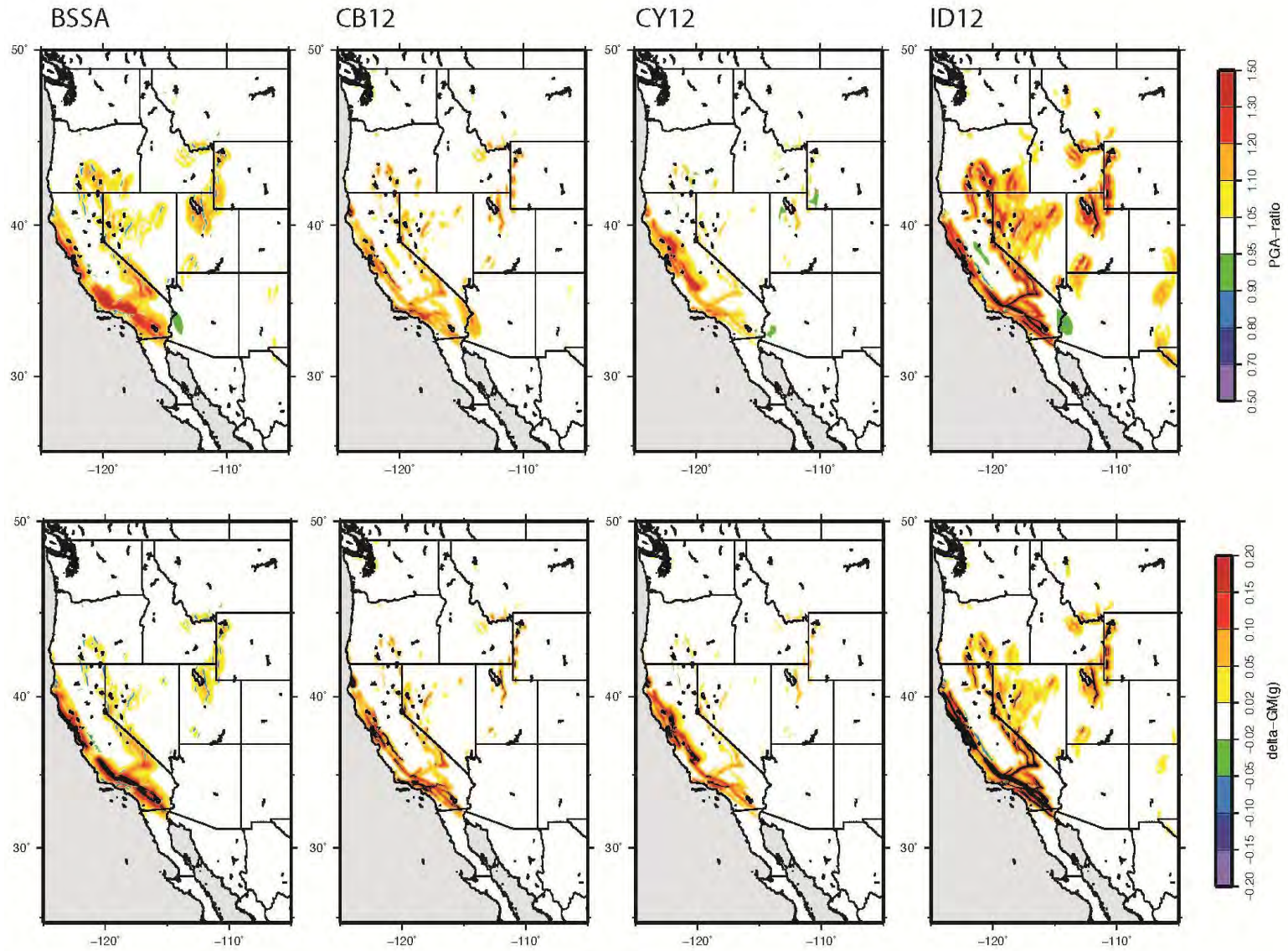
Abrahamson-Silva12/2008 1hz SA ratio, aFaults



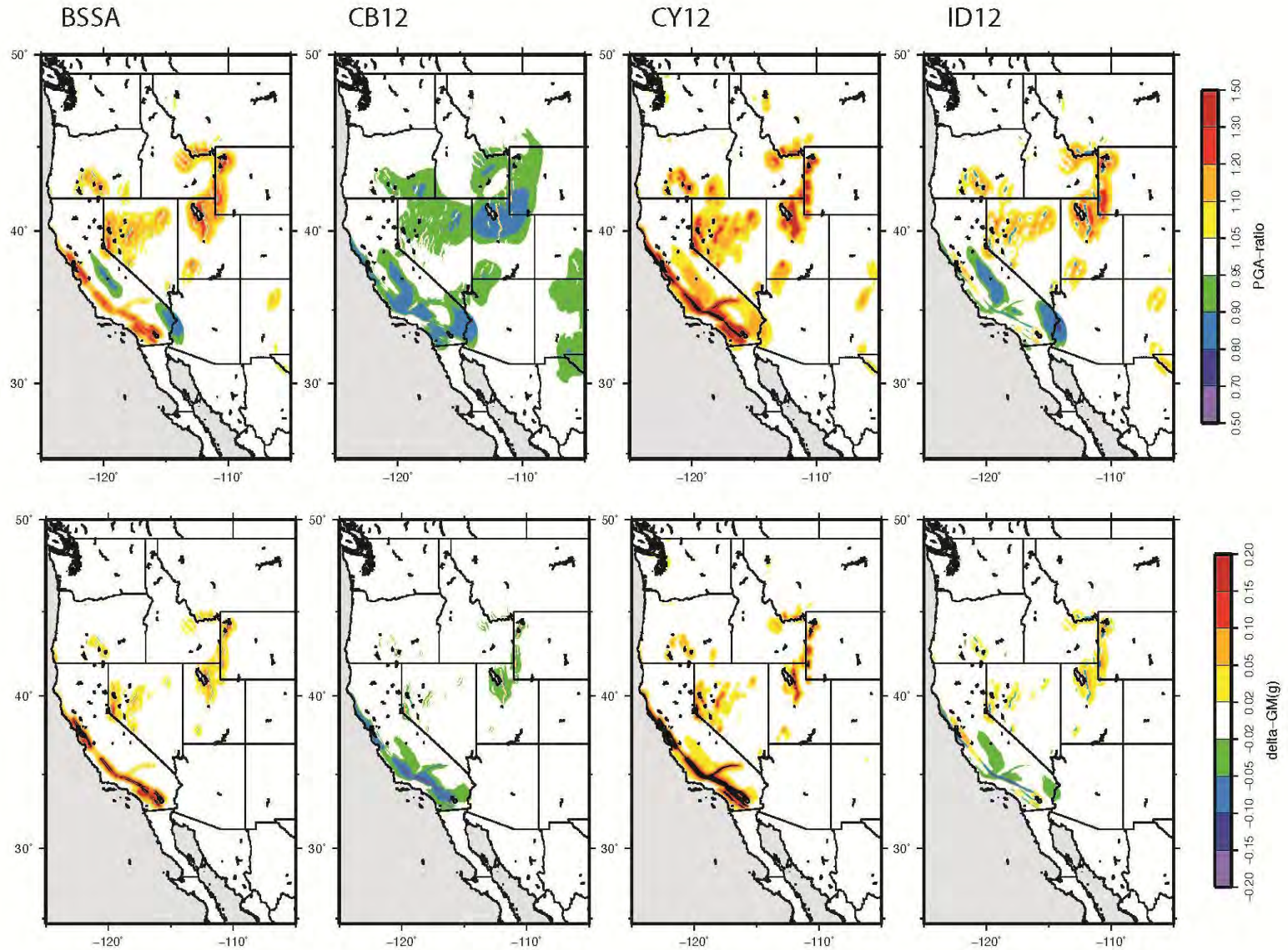
Abrahamson-Silva12/2008 5hz SA ratio, aFaults



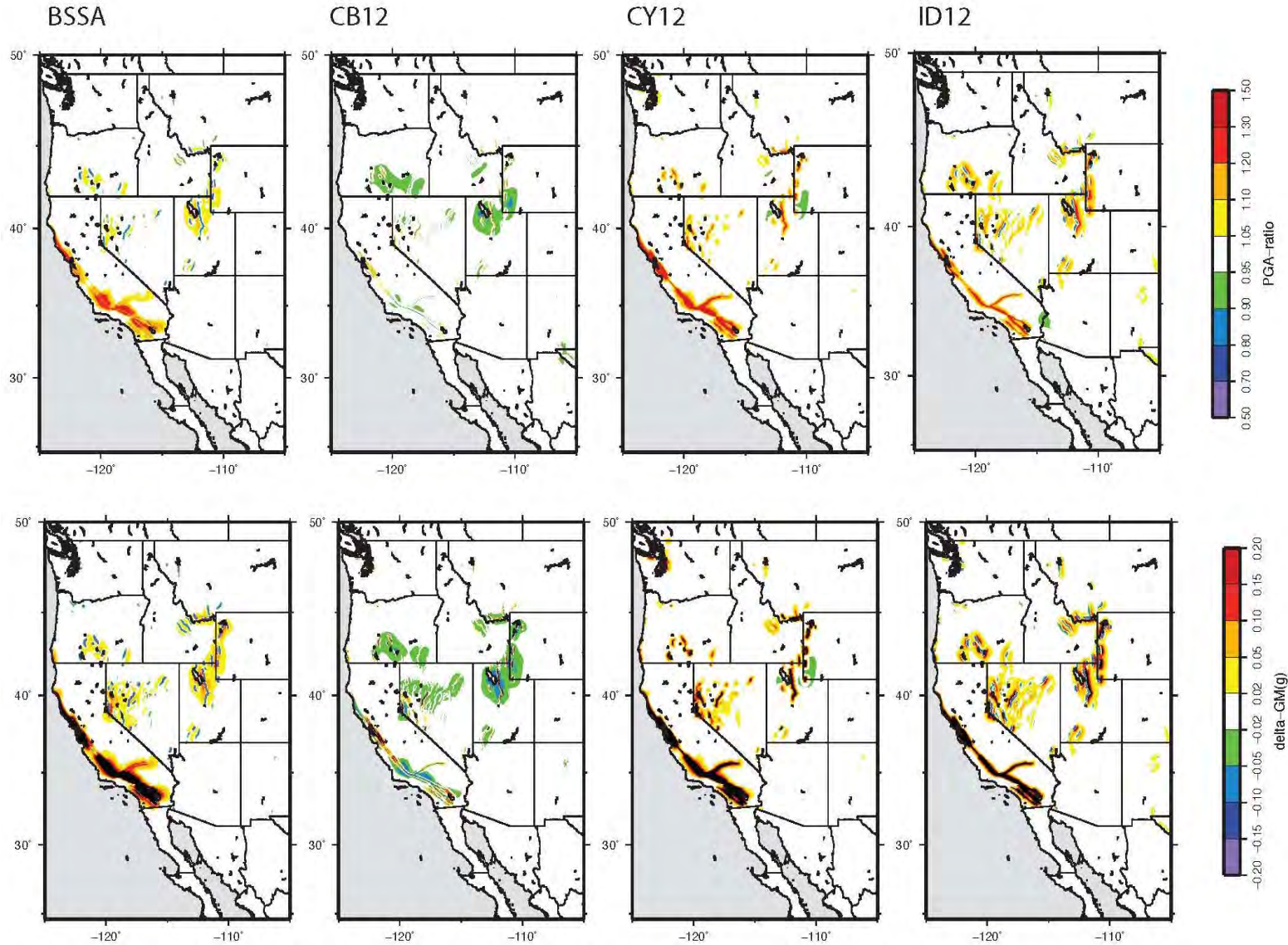
# PGA



# 1 Hz SA



# 5Hz



# GMPE ratios 1hz over 2008 model

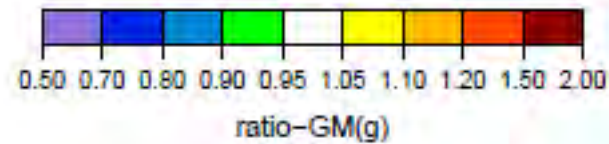
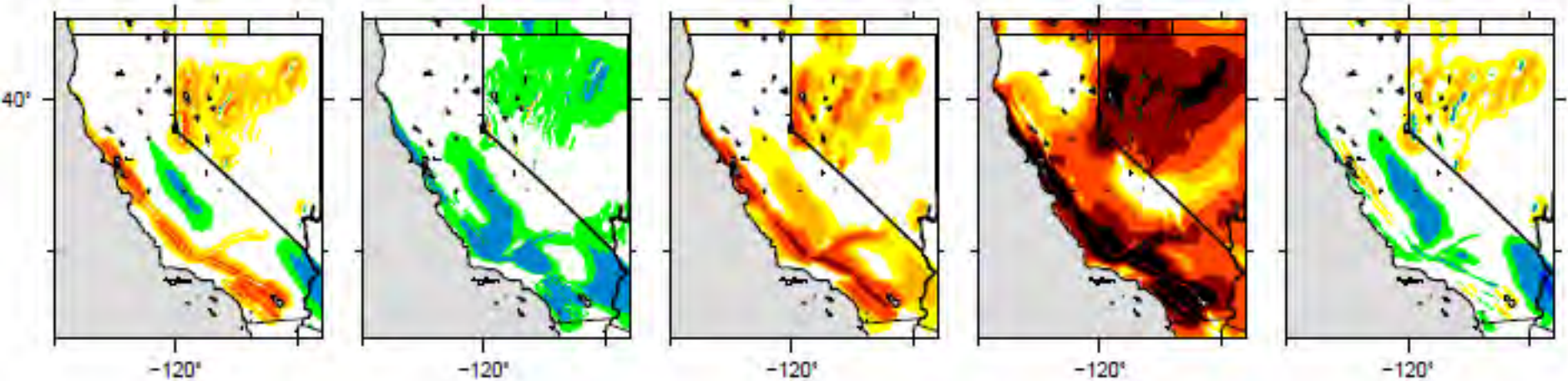
*BSSA, 1hz*

*CB12, 1hz*

*CY12, 1hz*

*GR12, 1hz*

*id12, 1hz*



# GMPE ratios for PGA over 2008 model

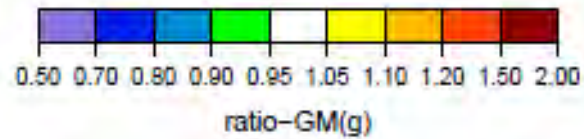
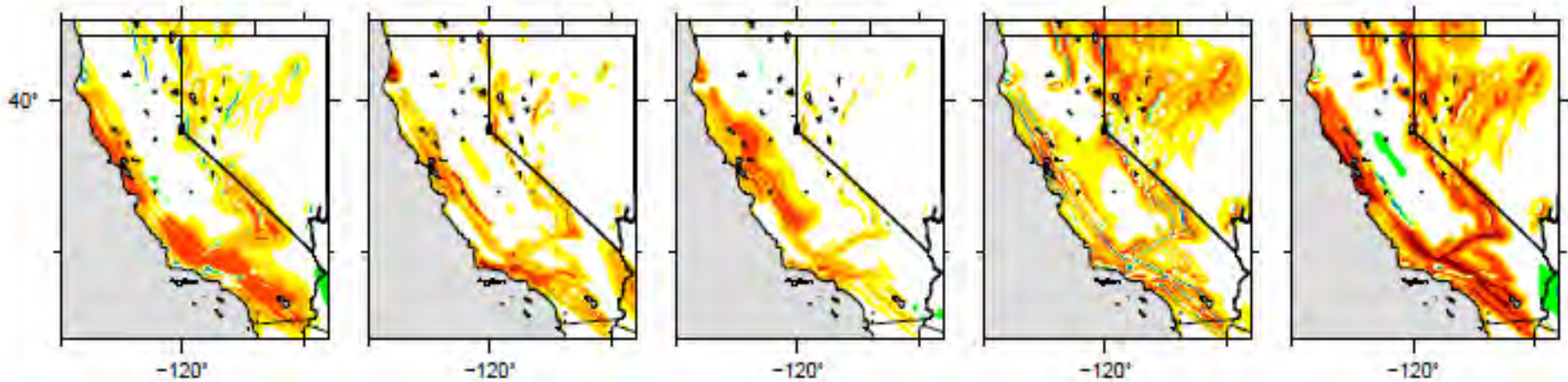
*BSSA, pga*

*CB12, pga*

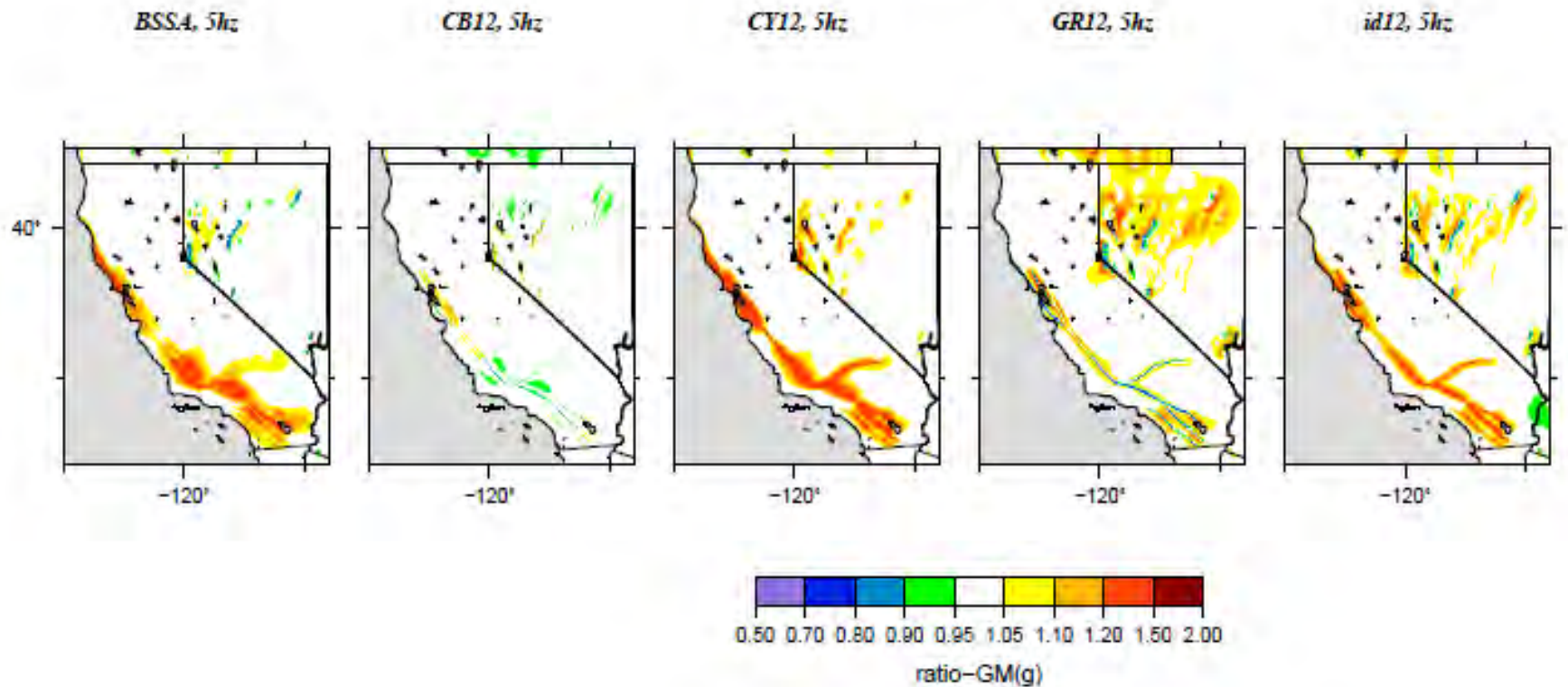
*CY12, pga*

*GR12, pga*

*id12, pga*



# GMPE ratios for 5 hz over 2008 model





# Weighting of WUS models

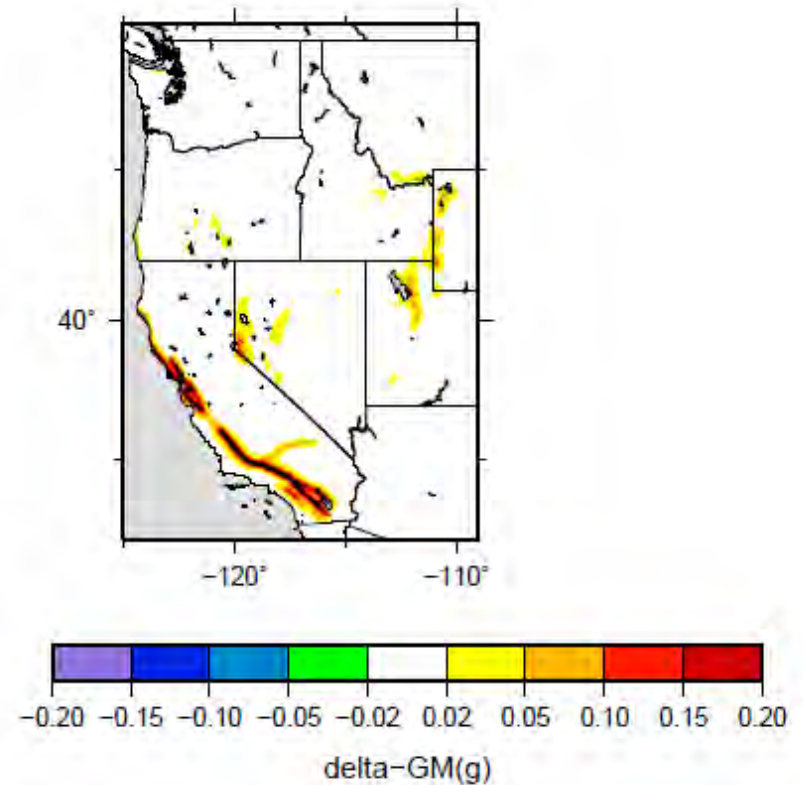
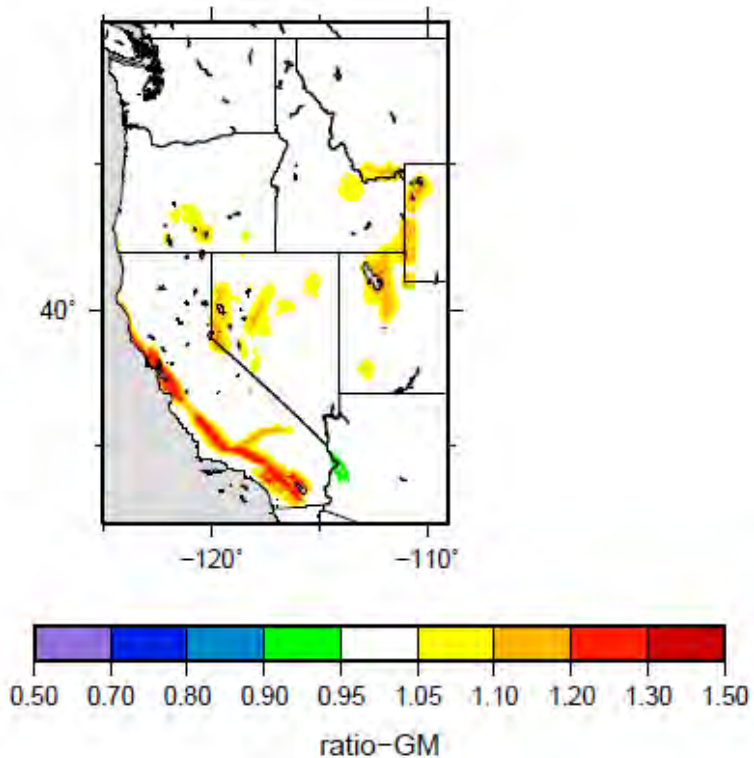
# 1. Weighted models (1hz)

This model uses the updated versions applied in 2008:

Boore and Atkinson (2012, wt = 0.33)

Campbell and Bozorgnia (2012, wt= 0.33)

Chiou and Youngs (2012, wt = 0.33)



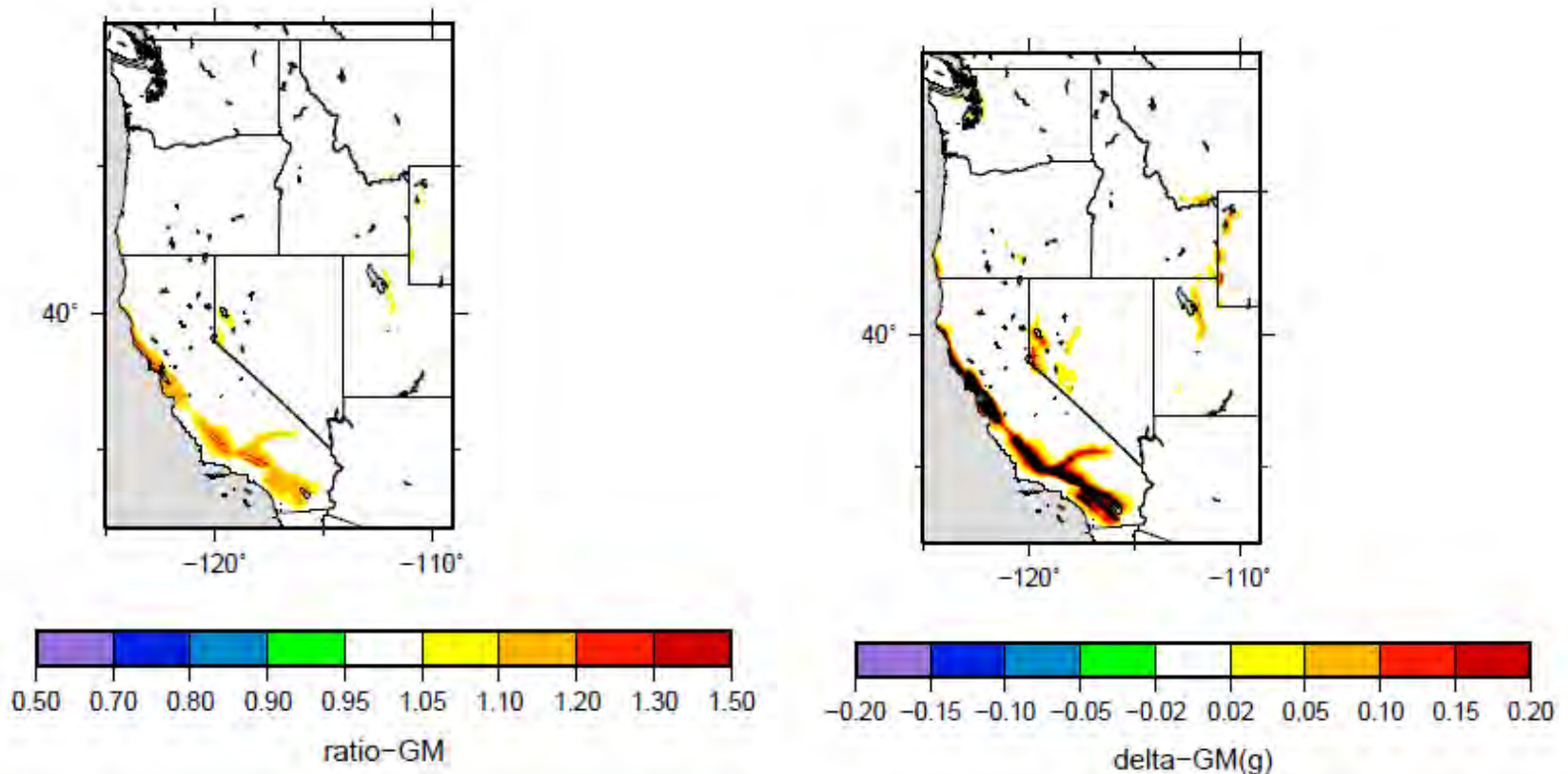
## 2. Weighted models (5 Hz)

This model uses the updated versions applied in 2008:

Boore and Atkinson (2012, wt = 0.33)

Campbell and Bozorgnia (2012, wt= 0.33)

Chiou and Youngs (2012, wt = 0.33)



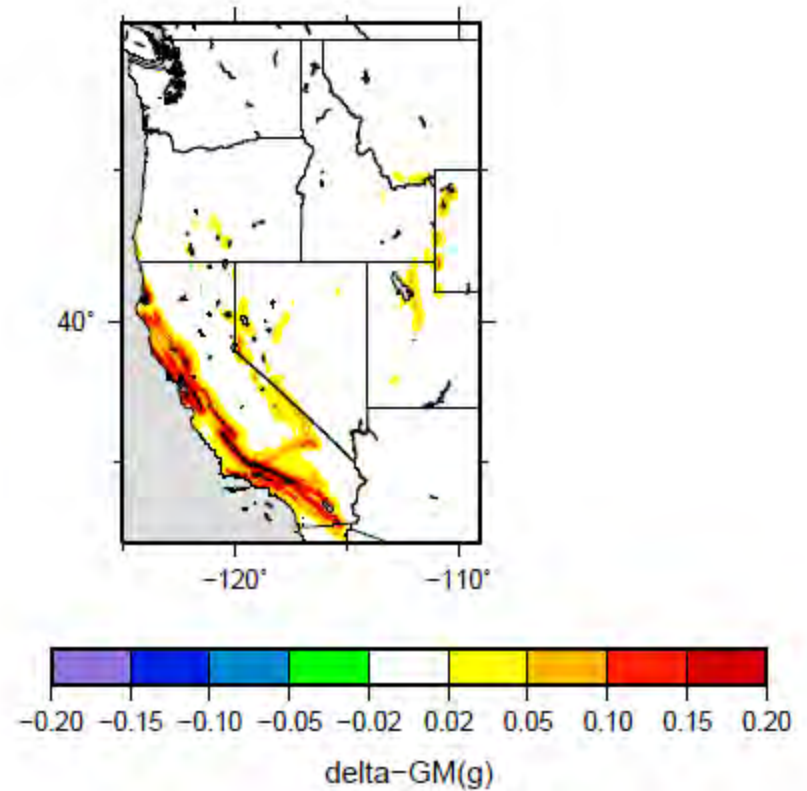
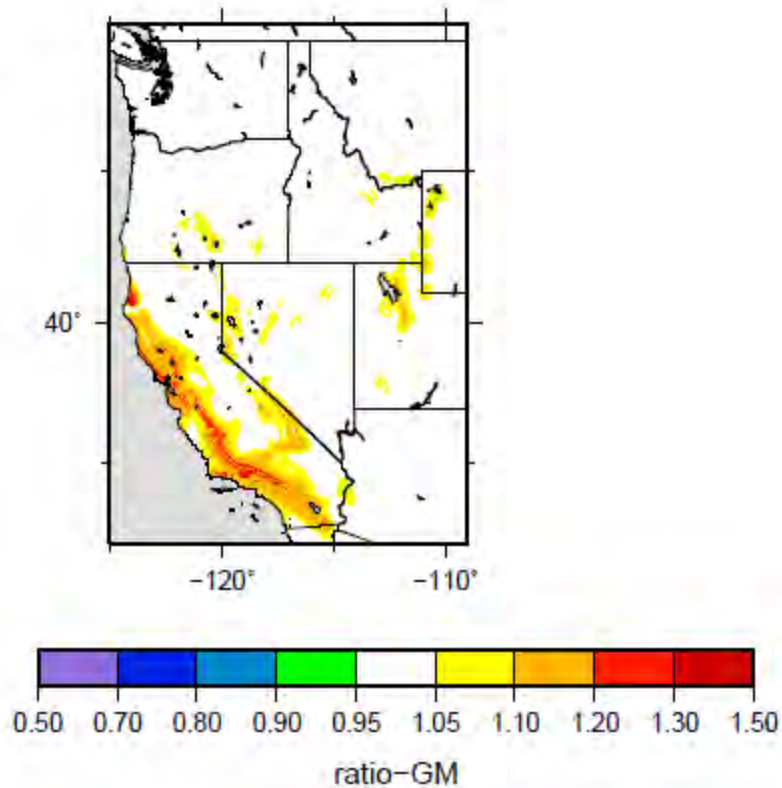
# 3. Weighted models (PGA)

This model uses the updated versions applied in 2008:

Boore and Atkinson (2012, wt = 0.33)

Campbell and Bozorgnia (2012, wt= 0.33)

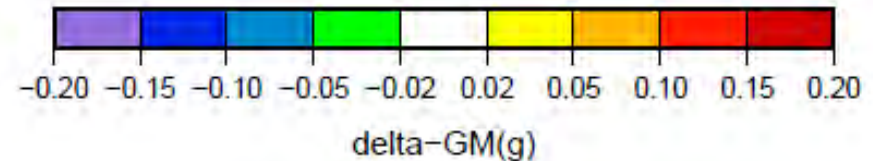
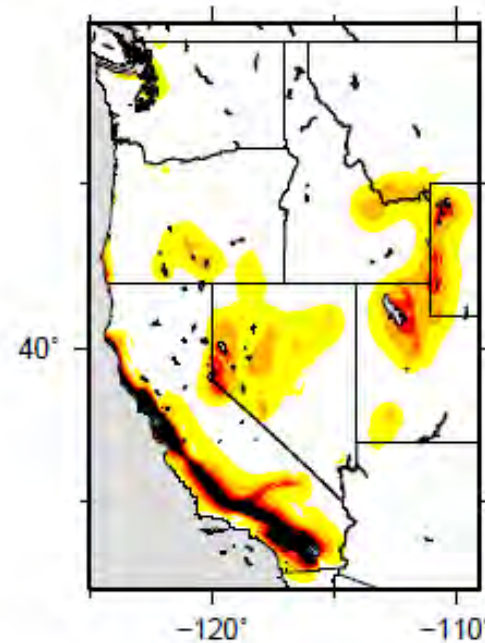
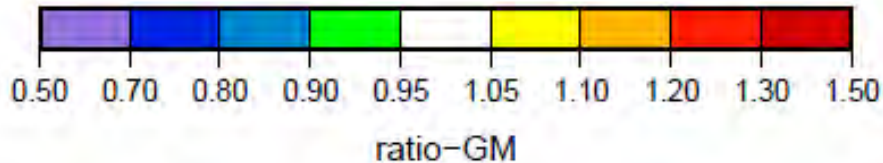
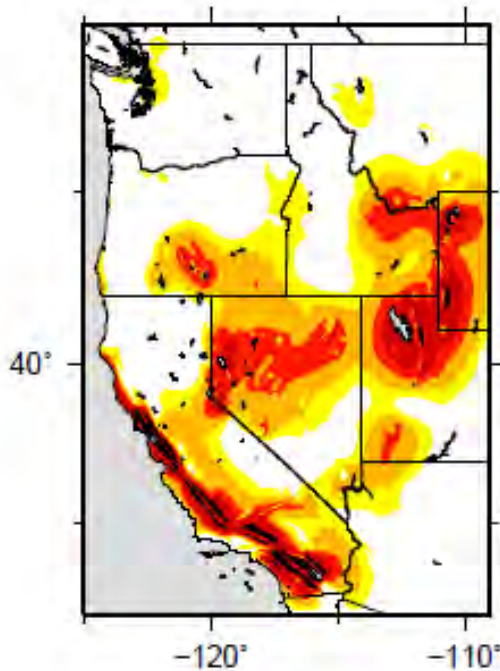
Chiou and Youngs (2012, wt = 0.33)



# 4. Weighted models (1hz)

1/6=0.16 weight on each of the following GMPEs:

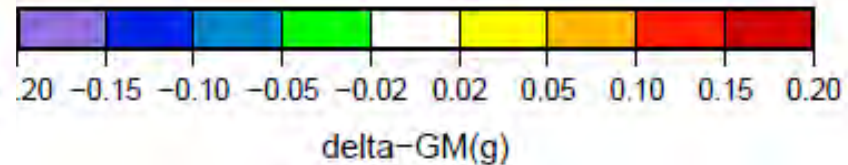
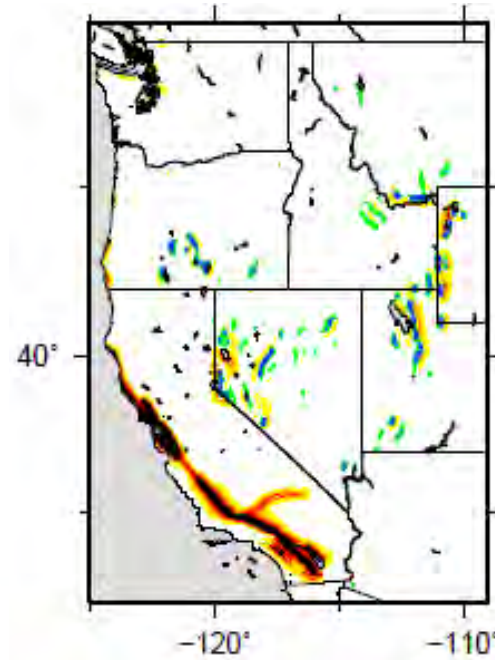
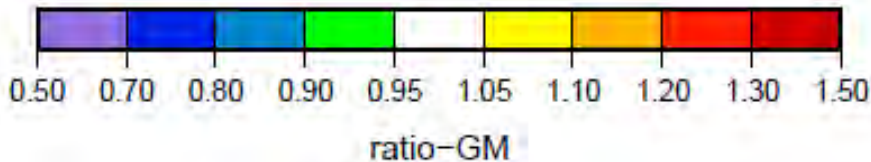
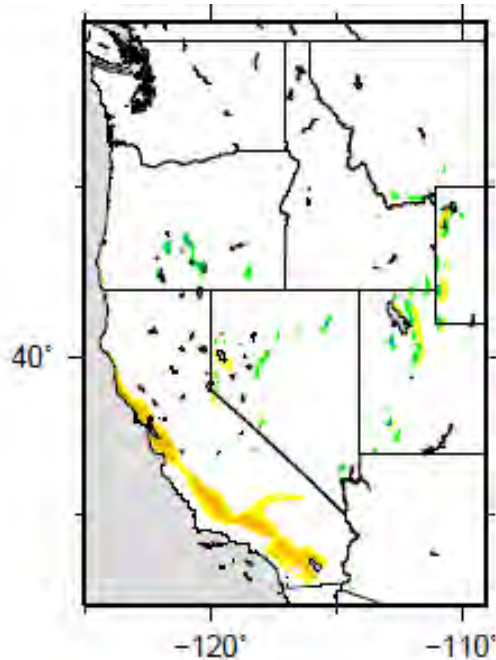
Abrahamson and Silva, Boore and Atkinson, Campbell and Bozorgnia, Chiou and Youngs  
Graizer and Kalkan, and Idriss



# 4. Weighted models (5hz)

$1/6=0.16$  weight on each of the following GMPEs:

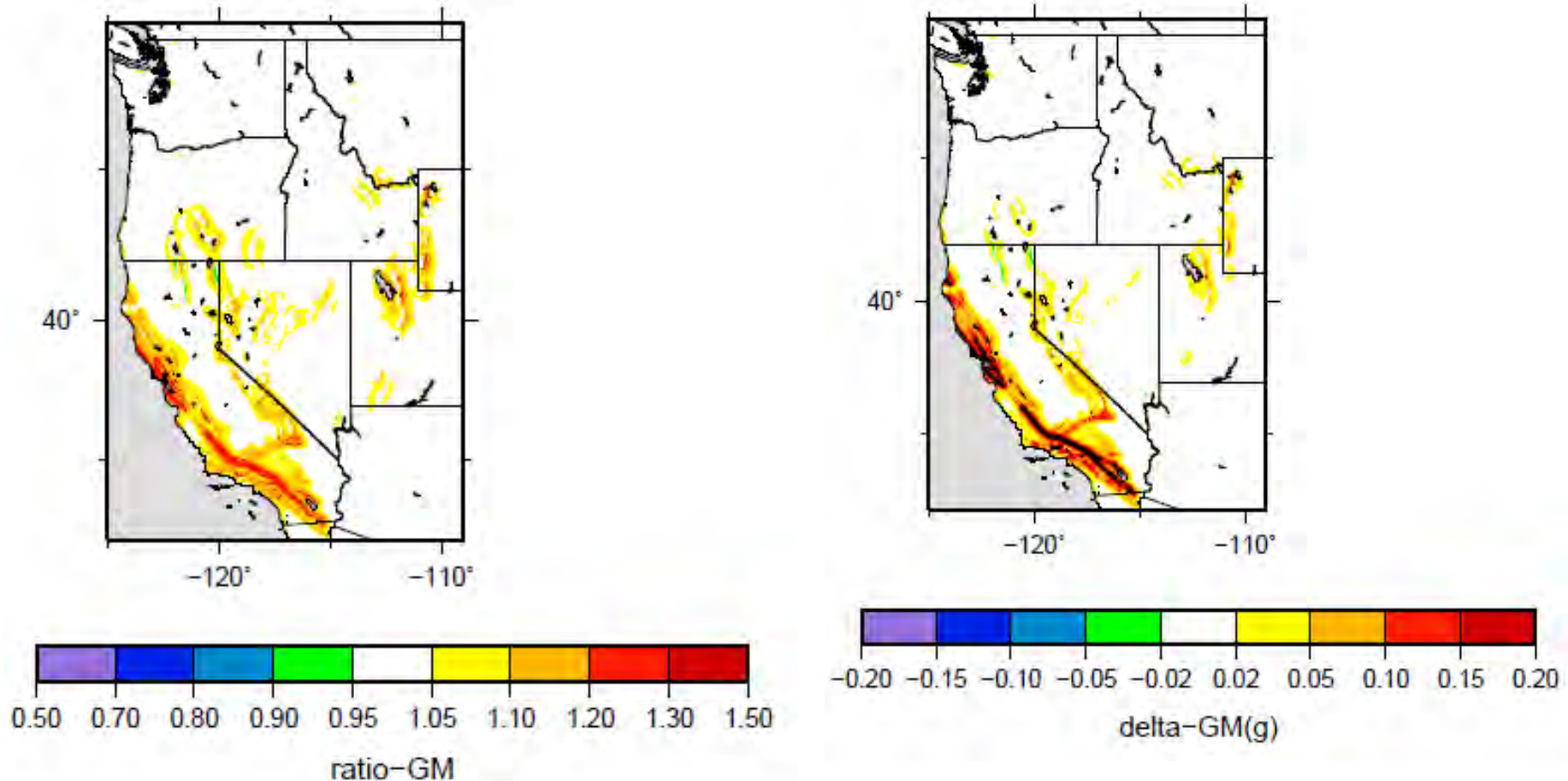
Abrahamson and Silva, Boore and Atkinson, Campbell and Bozorgnia, Chiou and Youngs, Graizer and Kalkan, and Idriss



# Weighted models (PGA)

1/6=0.16 weight on each of the following GMPEs:

Abrahamson and Silva, Boore and Atkinson, Campbell and Bozorgnia, Chiou and Youngs, Graizer and Kalkan, and Idriss



# Discussion

- Which GMPEs should we include?
- What should we consider in weighting the models?